DOCUMENT RESUME

ED 308 612 EA 021 111

AUTHOR Myers, Charles N.; Sussangkarn, Chalongphob
TITLE Economic Transformation and Flexibility of the Education System.
PUB DATE Jan 89
NOTE 45p.; Paper presented at the Workshop on Human Resource Problems and Policies sponsored by the U.S. Agency for International Development (Hua Hin, Thailand, February 24-25, 1989).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141) -- Viewpoints (120)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Economics; Elementary Secondary Education; Foreign Countries; Higher Education; *Human Capital; *Labor Force; *Productivity; *Resource Allocation; *Vocational Education
IDENTIFIERS *Thailand

ABSTRACT

This paper describes the relationship between the Thai education system and the changing economy by synthesizing existing research, focusing on several important research issues, and reviewing available policy options. Section 2 summarizes anticipated changes in the economy and patterns of labor demand, including current and prospective skill shortages. Section 3 presents an overview of the education system, its recent growth, and internal dynamics. Section 4 explains the problems in Thai secondary education and lists policy options for improvements. Section 5 discusses problems at the vocational level and issues of trainability and on-the-job training. Finally, section 6 analyzes higher education, focusing on engineering as an example of a problem at that level. The conclusion that the fit between the Thai economy and the educational system is weak and not improving is evidenced by skilled labor shortages. Only flexible and adaptable institutions at every level of the educational system can fill the demands for trainable, adaptable workers, technicians, engineers, and managers. (JAM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED308612

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Charles N Myers

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ECONOMIC TRANSFORMATION AND FLEXIBILITY OF THE EDUCATION SYSTEM

by

Charles N. Myers
and
Chalongphob Sussangkarn

January 1989

Paper prepared for: The Workshop on Human Resource Problems and Policies, February 24-25, 1989.

EA 021 111

CONTENTS

		Page
1.	INTRODUCTION	1
2.	STRUCTURAL CHANGES IN THE ECONOMY: LABOR DEMAND PATTERNS	3
3.	STRUCTURE OF EDUCATION	9
	3.1 Public Provision	9
	3.2 Diffusion of Responsibility and Degree of Responsiveness	9
	3.3 Overview of Enrollment Trends	12
	3.4 Internal Dynamics of the System	15
4.	PROBLEMS AND OPTIONS IN SECONDARY EDUCATION	17
	4.1 Low Enrollment Ratios	18
	4.2 Quality Variations	18
	4.3 Private Provision	19
	4.4 Demand Patterns and Explanations	20
	4.5 Policy Options	22
5.	VOCATIONAL SCHOOLS AND ON-THE-JOB TRAINING	26
	5.1 Vocational Schools (Below Bachelor's Degree)	27
	5.2 Training by Employers	28
6.	HIGHER EDUCATION	30
	REFERENCES	37

TABLES AND FIGURES

TABLES

		Page
1	Shares of Employment by Education: 1977-86	5
2	Employment by Sectors: 1986-2001	6

FIGURES

		Page
1	Schematic Representation of the Education Sector	10-11

ECONOMIC TRANSFORMATION AND FLEXIBILITY OF THE EDUCATION SYSTEM

1. INTRODUCTION

This paper looks at the relationship between the education system and the changing economy. The relationship is complex. It includes changes in labor markets, changes in education markets, the internal dynamics of the education system itself, and numerous problems of information, quality and lags. Changes made in higher education will not affect the labor market for five years; changes lower down in the system may not have significant effects for ten or twenty years.

There is evidence that the fit between the economy and the education system is weak and not improving. Rapid growth and structural transformation of the economy is led by the private sector, particularly export industry. Demand is for trainable, adaptable workers, technicians, engineers and managers. Skill shortages are evident. The education system is largely public, bureaucratic, offering limited choice, strongly affected by decisions at the higher education level, responding primarily to social demand. Students and parents making choices about continuation in school and choices about careers have (inevitably) imperfect information about employer demand, but also a more limited range of choice and quality options than a flexible and responsive system (and better capital markets) might supply.

A comprehensive analysis of the dynamics of the relationship will not be attempted. Rather, the paper will review and synthesize existing research, focusing on several issues which the research indicates are important and where policy options are available.

The paper is organized as follows. Section 2 summarizes anticipated changes in the economy and patterns of labor demand, including current and prospective skill shortages. Section 3 presents an overview of the education system, its recent growth and internal dynamics. Section 4 analyzes problems and prospects at the secondary level, Section 5 discusses problems at the vocational level, and issues of trainability and on-the-job training. And section 6 analyzes higher education, focusing on engineering as an example of problems at that level.

Each of these sections suggests topics and issues for more intensive investigation and experimentation, and policy options which might remove constraints, increase choice and flexibility, and induce significant change -- particularly, options for private provision and greater market discipline.

2. STRUCTURAL CHANGES IN THE ECONOMY: LABOR DEMAND PATTERNS

Major changes are underway in the structure of the Thai economy.[1] Thailand is now being talked about as the leader of the next wave of NICs. This has come about as a result of the rapid growth in manufactured exports starting around 1986. Rising labor costs in the current Asian NICs (South Korea, Taiwan, Hong Kong and Singapore), have led these countries to produce more technological and skill-intensive products. Fortunately, Thailand has been able to fill the gap left by these NICs. The most rapidly growing parts of our manufactured exports are the semi-skilled, labor intensive products which used to be the kinds of items that propelled the Asian NICs to where they are today. These include textiles and garments, sporting goods, toys, integrated circuits, rubber products, furniture etc..

While an appropriate exchange rate policy is very important[2], an abundant supply of low wage but highly trainable workers is also a crucial part of the current success of Thailand. It allows Thai industries to produce good quality products that are competitive in the world market.

Still not enough is known about the role of formal education in producing workers who are highly trainable for the

1. For forecasts of alternative scenarios of development of the Thai economy from 1986 to 2006 based on a 39 sector Computable General Equilibrium model see TDRI (1988a).

2. It was also important in the past success of the Asian NIC's. see eg. the comparison between South Korea and Thailand in Sussangkarn (1988a).

needs of modern industry. Is (good quality) elementary education sufficient? Or are the more trainable workers the ones who have progressed to secondary education? Bangkok industrial employers prefer to hire secondary graduates. Intuitively, one would expect that for semi-skilled labor intensive industries, good quality elementary education would be sufficient, and that the current success of Thai manufacturing is a reflection of the strength of at least part of the education system at the elementary level.

However, if the past pattern of industrial development and current hiring practices are any guide, one can expect the educational mix of industrial workers to be continually moving towards one relying more on the better educated workers. Table 1 shows the shares of the various educational groups in employment for agriculture, industry and services, for 1977 and 1986. It can be seen that between 1977 and 1986, the share in total employment of those with elementary education declined slightly from 76.4% to 75.9%. But the shares of those with elementary education in the employment composition of industries and services declined substantially. For industries, the share declined from 77.1% in 1977 to 69.8% in 1986, and for services, the decline was from 57.4% in 1977 to 51.0% in 1986. For agriculture, the share of the elementary educated workers increased.[3]

The pattern in table 1 indicates that as the average educational level of the labor force increases, the less educated become more and more concentrated in the less prosperous parts of

3. For those with elementary education and below, the share in agriculture declined slightly.

TABLE 1
SHARES OF EMPLOYMENT BY EDUCATION : 1977-1986

1977

	<P4	ELEMENT	SECOND	VOCAT	TEACHER	UNIVER	TOTAL
AGRICULTURE	17.74%	80.96%	1.17%	0.04%	0.07%	0.01%	100.00%
INDUSTRIES	12.14%	77.13%	7.01%	2.26%	0.19%	1.27%	100.00%
SERVICES	13.85%	57.43%	13.95%	4.88%	6.24%	3.64%	100.00%
TOTAL	16.57%	76.45%	3.95%	1.10%	1.17%	0.77%	100.00%

1986

	<P4	ELEMENT	SECOND	VOCAT	TEACHER	UNIVER	TOTAL
AGRICULTURE	11.12%	85.30%	3.01%	0.28%	0.14%	0.14%	100.00%
INDUSTRIES	8.10%	69.78%	13.91%	4.51%	0.47%	3.24%	100.00%
SERVICES	8.26%	51.01%	15.83%	7.58%	8.10%	9.21%	100.00%
TOTAL	10.15%	75.86%	7.07%	2.39%	1.99%	2.53%	100.00%

Source: NSO, Labour Force Surveys, 1977 and 1986, July-September

TABLE 2
EMPLOYMENT BY SECTORS : 1986 TO 2001

	1986	1991	1996	2001
AGRICULTURE	17802760	18702707	18817698	18088987
INDUSTRIES	2793030	3947970	5416002	7224467
SERVICES	6076510	7828835	9934360	12321632
TOTAL	26672300	30479512	34168060	37635086

SHARES

	1986	1991	1996	2001
AGRICULTURE	66.75%	61.36%	55.07%	48.06%
INDUSTRIES	10.47%	12.95%	15.85%	19.20%
SERVICES	22.78%	25.69%	29.07%	32.74%
TOTAL	100.00%	100.00%	100.00%	100.00%

AVERAGE GROWTH PER ANNUM

	1986	1991	1996	2001
AGRICULTURE		0.99%	0.12%	-0.79%
INDUSTRIES		7.17%	6.53%	5.93%
SERVICES		5.20%	4.88%	4.40%
TOTAL		2.70%	2.31%	1.95%

Source: NESDB (1988).

the economy. The higher value-added sectors take advantage of the increasing availability of better educated workers, and more than proportionately increase their share of the better educated in their work force. This demand for more educated workers is likely to accelerate with forecasted structural changes in employment as shown in table 2. With increasing competition from many of Thailand's neighbors with even lower wages than Thailand (such as the Philippines, Indonesia and China) in labor intensive manufacturing, Thai industries will have to shift more and more into the more advanced products. This is likely to lead to an even more rapid increase in the educational composition of the labor force in industries and services than have occurred in the past. Thus there is potential danger in the low enrollment ratios at the secondary level. In export industry and in other jobs which pay well (public sector and the private formal sector), there is and will be a need and a preference for better educated workers.

The workers with just elementary education will end up mostly in agriculture and in the informal sector of the private employee labor market. Yet the pattern in agriculture, is also changing rapidly. There is a growing shift from the major crops to higher value-added agricultural commodities, such as fruits and vegetables and aqua-culture. Agriculture technology has progressed to the point where Thailand is able to achieve quality in high value-added fruits and vegetables such as grapes, cantaloupe, asparagus, tomatoes etc., and in aqua-culture such as shrimp farming. For the longer term, Thai agriculture must continue to diversify and upgrade to guard against income declines such as occurred between 1981 and 1986 for the agricultural population.

However, as agriculture moves toward the higher value-added commodities, production processes become more complex, with more reliance on technology and information. For example, intensive Black Tiger shrimp production can yield up to 1,000 kg per rai per year, compared to 40 to 70 kg for traditional methods and 90 to 200 kg for semi-intensive method. But the technology of the intensive method is complex, demanding, unforgiving of error or inattention to monitoring requirements and information. For agricultural production of this nature, having just elementary education may no longer be sufficient. As Jamison and Lau (1982) have shown, in more technologically intensive agriculture as opposed to traditional agriculture, there can be productivity gains from having more than just the required compulsory education. Thus, there is both a need to upgrade the skills of the mass of those in agriculture with just elementary education (see Sussangkarn, 1988b), and to promote enhanced secondary enrollment in order that current and future farmers are able fully to promote and participate in the structural changes within agriculture.

Different and more advanced skills will be needed in the process of industrialization. This will be true for all segments of the labor market. At the higher end, given the current rapid pace of industrial growth, skills have to keep up with the rapidly changing pace of technology and product sophistication. Skill shortages are already evident and serious, particularly of engineers. Manpower forecasts suggest that there may be growing shortages of bachelors-level graduates and post-graduates in all scientific and technical fields over the next 12 years (TDRI, 1988b). Vocational graduates at below bachelors level may, conversely, be in surplus, and other research indicates a poor

fit between their training and employer demand.[4]

3. STRUCTURE OF EDUCATION

3.1 PUBLIC PROVISION

Education is provided mainly by the government. In 1984, the proportion of total enrollment in public institutions ranged from 50.85% at the pre-primary level to 95% at the tertiary level. Even for private providers, the government imposes many rules and regulations.

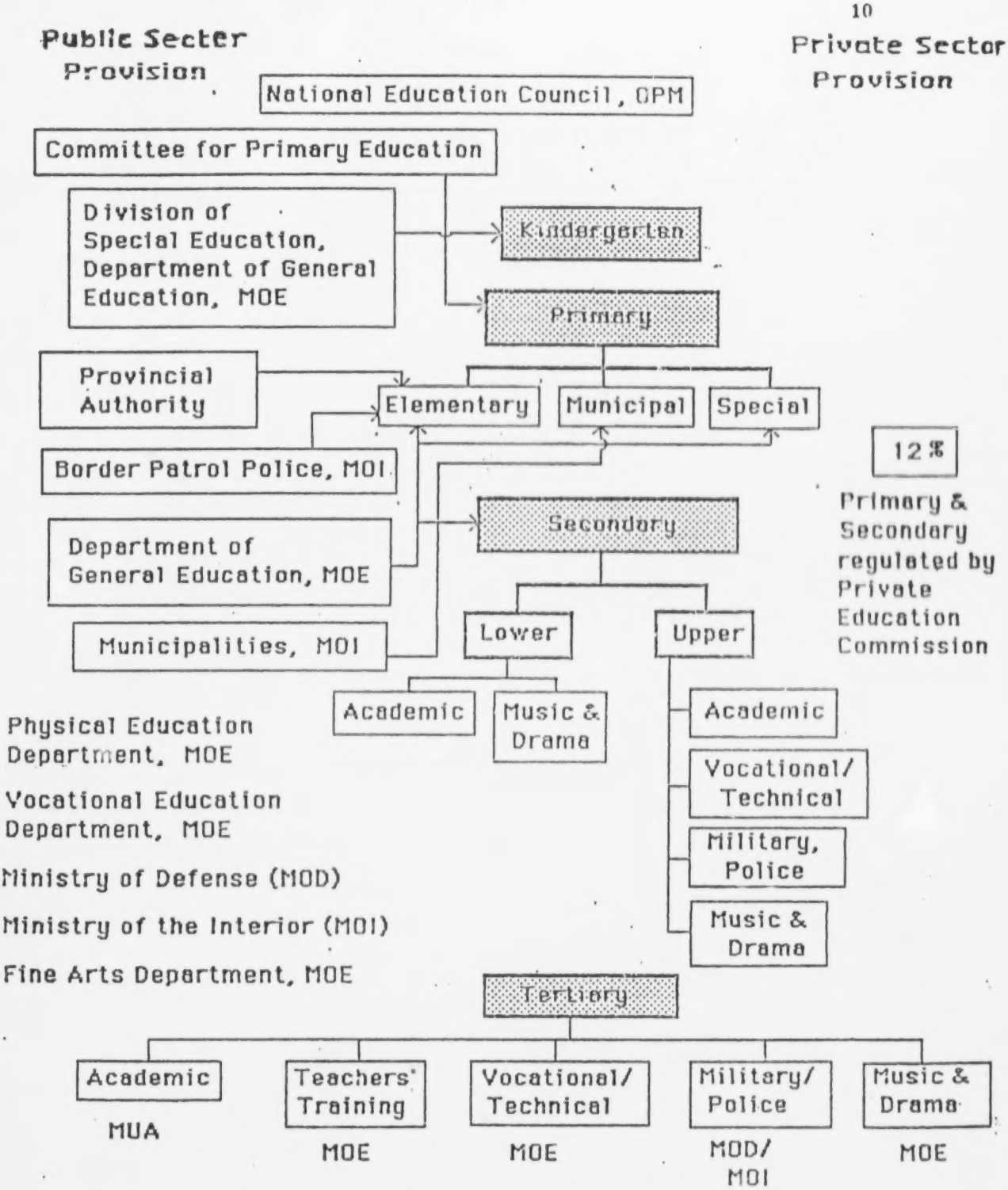
3.2 DIFFUSION OF RESPONSIBILITY AND DEGREE OF RESPONSIVENESS

The global structure of the education system is highly complex and fragmented (see Figure 1).[5] At least four government agencies are responsible for the administration of the formal education system; the Prime Minister Office (including the National Economic and Social Development Board, and the National Education Council), the Ministry of Education, the Ministry of Interior, and the Ministry of University Affairs. In addition, the layers of government administrative control extend all the way down to the district levels.

---

4. Ibid.

5. Figure 1 is reproduced from Chutikul-Khoman (1988).



Percentages are of enrolment by level of education

Source: NSO (1980), documents of various Ministries

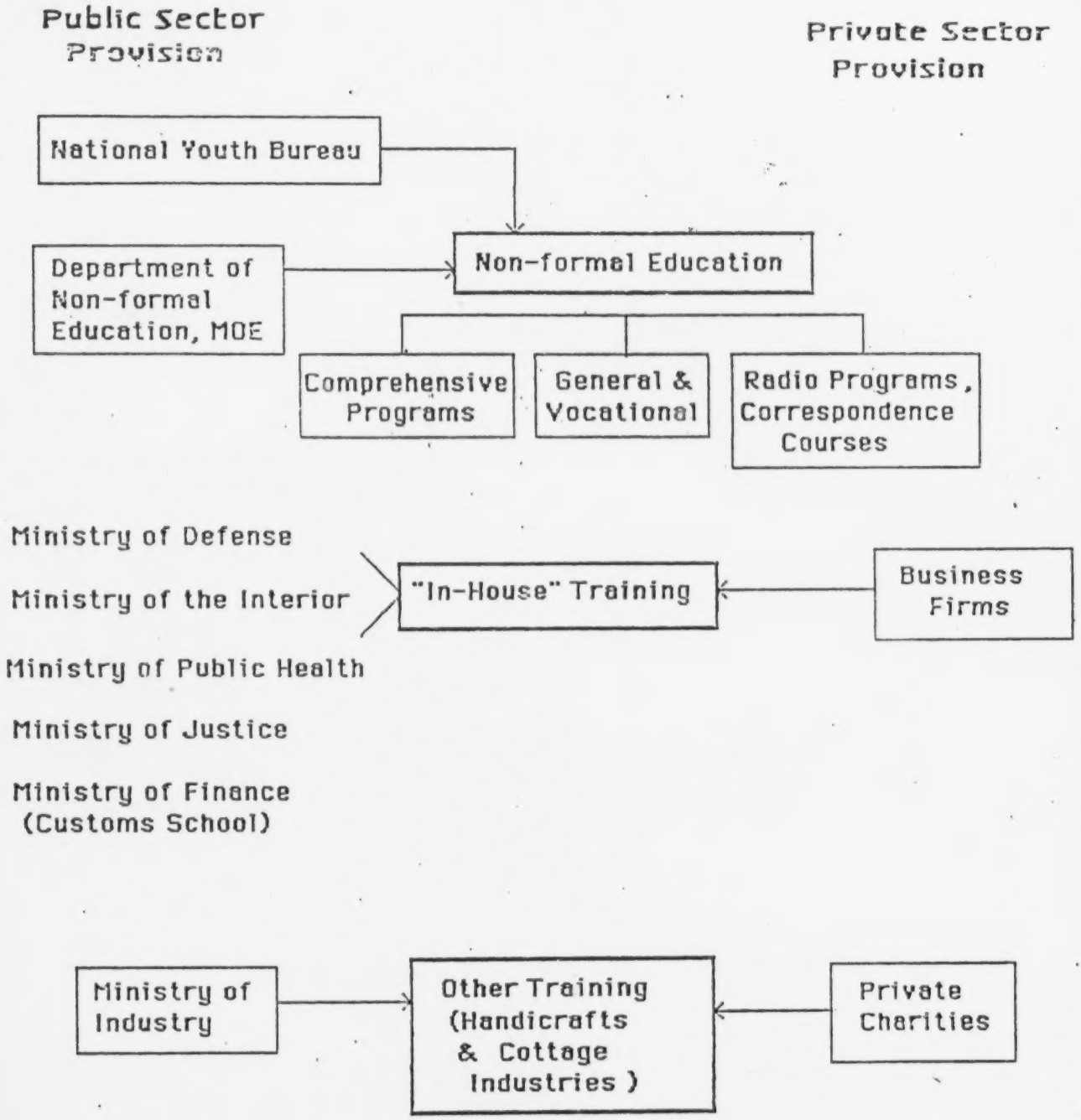


Figure 1 (continued):
Schematic Representation of the Education Sector

This fragmented and highly bureaucratic nature of the education system leads to too little coordination between different levels of education, and too much uniformity in curriculum for the diverse needs of different parts of the country and offers limited choices to households and students. In part this is because the system is strongly influenced by selectivity and structure of higher education as will be discussed in the section 3.4 below.

This top heavy system is not particularly flexible, and leads to difficulties in developing consistent planning for education. In a system such as education in which one level acts as a stepping stone to the other levels, an integrated planning approach is needed. In addition, as the structure of the economy changes, the importance given to different levels and between various fields of study within a level may have to change in line with economic changes. Being too fragmented and bureaucratic, each organization will be too concerned with its own domain, and plans to reallocate expenditures, reducing expenditures for some part and increasing for others, very rarely come from within the system.

3.3 OVERVIEW OF ENROLLMENT TRENDS

Enrollment at the primary level is at or near 100 percent of the nominal age group, but there is some counting of over-age students, repeaters and re-entrants in the data. The number of students entering the sixth grade and presumably completing primary school is increasing --by 15 percent between 1981 and 1985 (Sussangkarn, Ashakul, and Myers, 1986) -- even though the primary school age group grew relatively slowly during the period because of the fertility decline.

There are large variations in expenditures per student and variations in quality of primary schools.[6] Quality improvement would reinforce trends toward completion, improve the trainability of primary school leavers and improve quality and continuation at the secondary level. This is an equity issue -- the poorer quality schools serve rural households. But it also means that innately gifted rural children -- still the greatest pool of potential talent in the Kingdom -- may be lost even before they begin. NEC is currently collaborating with the Harvard Institute for International Development (via the BRIDGES project) on an analysis of the determinants of primary school quality. Depending on these findings a variety of experiments could be supported and analyzed. If, for example, the results suggest that making available text books for primary students is a cost effective measure then a fund to publish and provide them could be established and costs and benefits assessed.[7]

Above elementary school, the picture is different. Gross enrollment ratios at the secondary level are quite low at about 30%. Gross enrollment ratios in higher education are quite high at about 23%, mainly due to the extraordinary growth of the open universities. Secondary, vocational and higher education are discussed in detail in the sections which follow. But underlying these enrollment patterns, some important trends are evident.

---

6. See NEC (1982), TDRI (1986), and NEC/Harvard (Forthcoming).

7. The case for continued subsidy of primary education -- and even of some of the ancillary costs to poorer households -- is strong (Jimenez, 1987). Provision of text books to lower income students has been shown to be cost-effective in a number of countries (Fuller, 1985).

The absolute numbers of students going on to the next levels is increasing even though continuation rates are decreasing.[8] Between 1981 and 1985 the proportion of public primary school graduates going on to public lower secondary schools decreased from 39.3 percent to 38.2 percent between 1982 and 1985, and the percentage of public lower secondary school graduates going on to public upper secondary schools decreased from 61.6 to 54.8 percent. But the absolute numbers going on to lower secondary schools increased by 10 percent, and the number going on to upper secondary schools increased by 12 percent. Thus, while the demand for continuation from those who have completed the previous level have been declining as a proportion, the absolute numbers who continue to the next level have been increasing. This is partly a reflection of the higher completion rates at levels just below. But they also reflect the relatively high private (including opportunity) costs, supply constraints, and relevance of the curriculum at the secondary level which are discussed in section 4 below.

However, if vocational schools are added, the option to continue beyond the lower secondary level is exercised by most students who complete lower secondary education. The proportion of lower secondary graduates going on to either upper secondary or vocational school was 94 percent in 1982, 92 percent in 1983 and 86 percent in 1984. Again, the absolute numbers going on increased by 11 percent, even though the continuation rates decreased.[9] Thus, once a student has progressed to the secondary level, and has passed that level, there is a strong tendency for him or her to continue in the formal education system, whether at

8. Sussangkarn, Ashakul, and Myers (1986), Table 6.4.

9. Ibid.

the upper secondary level, or at the vocational level. The most important exit point of students from the formal education system is just after the compulsory level, where only about half of those who have completed compulsory education remain within the formal education system.

3.4 INTERNAL DYNAMICS OF THE SYSTEM

The objective of most students at the upper secondary level is higher education. And there are strong internal dynamics of the system such that policy at the higher education level affects demand patterns (at least in the cities), and the curricula at the lower levels (Myers, 1988).

Regular patterns of influence of higher education on the rest of the system are seen in many countries. Social demand, selection mechanisms, labor markets, and the behavior of the system of higher education interact to create these patterns.[10] As the supply of higher education graduates increases, employers prefer to hire the "best" graduates. Secondary graduates prefer to attend the "best" universities, or to get degrees in the "best" fields. But best is hard to determine directly. Quality of higher education institutions is, in practice, assessed by applicants and employers by proxy measures -- by general reputation, by category of institution (non-university vs. university), by prestige of field, perhaps by anticipated rate of return, above all by selectivity.

If, as in Thailand, places in closed enrollment

10. Among the works which deal with these patterns are: Garvin (1980), Green (1980), and Teichler, Hartung, and Nuthmann (1982).

universities are tightly rationed by examination scores, while places in the open access universities require only completion of secondary school, then applicants will show a strong preference for admission to the selective institutions -- even in less selective fields. The number of applicants sitting for the examination for entry into the closed universities has increased each year, the proportion admitted has decreased.

Increased selectivity of higher education increases demand for high quality secondary education. Thus, differentiation in higher education creates a similar differentiation at the secondary level. This is one of the basic patterns of the relationship between higher education and secondary education. Quality at the secondary level is measured by parents by success of graduates on national tests and admission to the most selective universities.

In Bangkok and other cities, the demand for (perceived) high quality places at the secondary level has had the predictable consequence of increasing demand and competition for places in high quality "feeder" primary schools, and even in kindergartens and nursery schools. Extra payments to schools, private tutoring, and evening cram schools are also part of pattern.

Since admission to selective universities is by national examinations, the examination not only reflects the academic curriculum in secondary schools, it increasingly dominates the curriculum. Intensification of student effort in most schools and upgrading of standards in some schools can be expected. But the focus may be narrower, and the emphasis tends to be on better results in the examination, not enrichment of the curriculum as a

whole, or on student specialization and excellence in particular fields of interest, unless these happen to coincide with content of the examinations. Further, admission to the selective universities is to a field, not to the university as a whole, and there is significant variation in selectivity by fields. Some proportion of student may opt for less selective fields in order to get admission to more selective universities. This may alter where they put their effort at the secondary level. Students' real interests and perhaps their future creativity may by sacrificed to the admissions objective. This may be a particularly important issue for students strong in math and science but not able to gain admission to the relatively few places available in engineering (see section 6, below).

Given these patterns, future changes at the higher education level -- eg: an increase in open enrollment places in the provinces or an increase in enrollment in the closed universities, or changes in selection mechanisms -- could have significant impacts on secondary education and below.

4. PROBLEMS AND OPTIONS IN SECONDARY EDUCATION

There are four important characteristics of secondary education: low enrollment ratios, large quality variations, declining private provision, and a bimodal pattern of demand. This section summarizes these characteristics, reviews recent research results on causes and consequences of each, and suggests policy options.

4.1 LOW ENROLLMENT RATIOS

The gross secondary enrollment ratio in 1985-86 was 30% (TDRI, 1988c, p. 61), and in the academic stream: 35.1 percent in lower secondary and 15.2 percent in upper secondary (Sussangkarn, Ashakul, and Myers, 1986, Table 6.5).

Based on the transition ratio method, gross secondary enrollment ratios in Thailand are projected to be: 33.5 % in 1990, 36.6% in 1995, and 39.9 % in 2,000 (Phananiramai and Mason, 1987, p. 17.).

These ratios are below the Sixth Plan targets, the lowest in ASEAN, and far below what they were in Korea when GNP per capita in Korea was $900 (in 1988 dollars).

4.2 QUALITY VARIATIONS

Quality variations -- measured by differences in scores on standardized tests -- are large, particularly between municipal and non-municipal secondary schools and between the elite Bangkok schools and all others (Jiratatrapasot, 1988). Average scores of twelfth graders tested by NEC in 1982-83 were 60% out of 100% in Thai language and 45% out of 100% in science and math. Students in Bangkok schools did much better. National testing of 12th graders in 1984 showed the majority of students failing math and science; 50 percent failing social science, and 40 percent failing Thai language (Office of Educational Assessment and Testing Services, 1984). Average ninth grade scores in a sample of 152 schools tested by NEC were below passing levels (50% out of 100%) in all subjects except social science, and below 35% out of 100% in math; scores in rural schools were as low as 5% out of

100% (Jiratatrapasot, 1988). These differences reflect and reinforce demand patterns, extra parental contributions, and thus expenditures per student.

Average recurrent costs per student in academic secondary schools in 1985 were 2,850 to 2,950 baht (Sussangkarn, Ashakul, and Myers, 1986, Table 6.26; and Phananiramai and Mason, 1987, p. 21). Parapob (1985) found variations in a sample of lower secondary schools in Bangkok of between 2,000 to 5,695 Baht per student per year in public schools, and 2,769 to 9,949 Baht per student per year in private schools.

Expenditures variations are correlated with school and teacher characteristics which, together with the socio-economic status of the students, explain variations in student performance.[11]

4.3 PRIVATE PROVISION

Private schools are enrolling a diminishing proportion of academic secondary students. In 1985, private schools enrolled 13 percent of lower secondary students and 9 percent of upper secondary students -- down from 15 percent and 12 percent respectively in 1982. Private enrollments in Bangkok are higher, 28 percent of lower secondary students and 14 percent of upper secondary students in 1985, but also decreasing.

Although private schools receive a number of subsidies, new private schools face various barriers to entry. Most important

11. Sussangkarn, Ashakul, and Myers (1986), Jiratatrapasot (1988).

may be the official tuition ceiling (Sussangkarn, Ashakul, and Myers, 1986; Myers, 1988). There is anecdotal evidence that informal money prices, or rents, received by existing private secondary schools and some elite public schools in Bangkok have increased, suggesting increased demand for quality places and supply constraints in cities.[12]

These is also evidence that value-added by private schools is higher than value-added by public schools, after controlling for student characteristics and other school characteristics (Jimenez, et al, 1988).

4.4 DEMAND PATTERNS AND EXPLANATIONS

Demand for secondary education is bimodal, with low effective demand and no enrollment by the large majority of all children in rural areas at one extreme and intense competition, tutoring, parental pressure and large informal payments to prestigious secondary schools in cities at the other. The pattern in urban areas is affected by demand for higher education and by the selectivity of the closed universities as explained above.

Secondary enrollment ratios are generally low in economies in which the share of employment in agriculture is high and value added per worker in agriculture is low compared to other sectors of the economy (Sussangkarn, 1988a). Thus, low rural enrollment reflects the past pattern of Thai development. Jamison and Lau (1982) found that returns to more than primary education for traditional farmers are low. This was partly confirmed in

12. Ibid.

Hutaserani and Jitsuchon (1988), who found that education of the household head was not important in explaining the income of farm households in Thailand. Sussangkarn (1987) found that returns to education in the urban informal sector[13] are also low or nil, while returns to secondary and higher education in the urban formal sector are high. Thus, low enrollment of rural children may reflect an accurate assessment by their parents of current market realities. The formal sectors, where there are clear and high returns to education, are mostly in the urban areas, and hence urban children can more easily perceive the benefit that secondary and higher education give them in terms of access to formal sector jobs.

Analysis of the 1981-82 SES data indicates that factors which increased the likelihood of enrollment in secondary school were high levels of parents education, income, and wealth, low student teacher ratios, and urban residence; factors which reduced the likelihood of enrollment were large family size, and own-account economic activity.[14]

But there are cost and supply problems as well. Direct costs to households of a child's attending secondary school are high -- in Bangkok, higher than the direct costs of some of the closed universities (Parapob, 1985; TDRI, 1986; Chutikul-Khoman, 1987; Nitungkorn, 1987; NEC, 1987). Opportunity costs in rural areas -- particularly where the rural fertility decline has been most pronounced such as the North -- may also be high.

---

13. For private employees.

14. Sussangkarn et. al. (1988). See also Phananiramai and Mason (1987), Appendix C.

Poor quality of schools reduces demand. Variations in test scores indicate that rural secondary schools are of low quality. Parents may accurately assess the probability of advancing to higher education or of learning much of value via such schools to be low. Indeed, rural children are often sent to larger, higher quality secondary schools in cities, by-passing the local secondary schools. Of the students interviewed by NEC, 18% were living away from home in the sample of schools in Bangkok, and 31 percent in schools in the municipal sample (Sussangkarn, Ashakul and Myers, 1986). The curriculum at the secondary level may also be of little relevance to children in the rural areas, who may wish to increase their knowledge and skills to help their parents on the farm. The curriculum are designed mostly for taking and passing the university entrance examinations, so that those who, for what ever reason, do not see higher education as within their reach, will simply exit from the formal education system after the compulsory level.

4.5 POLICY OPTIONS

Less than half of Thai youth go beyond primary school. If current trends continue this will be true even in the year 2000. The productivity of more than half the future labor force is at risk. The current situation, including quality variations at both the secondary and primary levels, may negatively affect labor trainability and the transition of the labor force from agriculture to industry and services. High secondary academic enrollment ratios and quality are associated with and, in fact, preceded rapid industrialization in the Asian NICs.

What this observed relationship means is still uncertain. Some studies show that secondary schools particularly high

quality schools (but not vocational schools) enhance cognitive skills and labor trainability and thus increase both private and social returns (Knight and Sabot, forthcoming). Other studies argue that secondary education produces a disciplined labor force appropriate for industrial production (McGinn, et al, 1980, which analyze the pattern in Korea), or serves as a signalling or screening device. Whatever the explanation, electronics assembly plants in the BMA show a strong hiring preference for (female) secondary school graduates, and shortage of skilled workers has been cited by Japanese and other foreign firms as a constraint to their investing and expanding in Thailand. Enrollment ratios in Thailand are still comparatively low and, at the upper level, half of the students go to vocational schools which employers in industry appear to regard less favorably than academic secondary schools.

Rural children, for the reasons suggested above, are increasingly left behind, least able to compete, or left out of this process entirely. Even if high quality schools were widely available at the secondary level, rural students of equal or superior innate ability to urban students have neither the inter-generational advantage of educated parents nor the nearness and clarity of labor market signals of their urban counterparts. That this is an equity issue is obvious. But it's more than that. An important function of secondary and higher education is to identify talent.[15] Some of the important -- if, as yet unmeasured -- external benefits of expanded access to higher education may come from greater identification of talent. If half or more of potential secondary students and potential talent are left out of the process for one or more of the reasons

15. See the classic article by Schultz (1968).

suggested, then higher education and the nation are the poorer.

If the relatively low enrollment persists, the direct consequences of the problem for higher education will include fewer graduates of high quality schools entering universities than would otherwise be the case.

Thus, rapid structural change of the economy and equity consideration require an increase in secondary enrollment and improvements in quality. Improvements in quality by themselves are likely to increase enrollment and retain students already enrolled.

There are both short-term and longer-term options.

Short term measures would be to:

a. Reduce opportunity costs of secondary school attendance by altering the academic calendar and/or school hours to free students for periods of peak labor demand. The MOE's "semi- formal system" experiments are attempting to do this.

b. Subsidize direct costs to the poorer households by providing an allowance per child attending; eg. for uniforms (about 100 Baht), shoes (70 Baht), books (200 to 400 Baht) and stationary (50 Baht) and perhaps transportation.[16]

c. Encourage income producing activities involving teachers and students after school hours; this is popular with parents but requires special dedication by teachers (TDRI, 1988c).

16. NEC estimates.

d. Provide "opportunity vouchers" for gifted and talented rural children, organized and offered by communities, government and/or private sector companies. For example, families of rural students with high scores in math and science would receive the direct and opportunity costs of secondary schooling -- if necessary, at better quality municipal schools.

e. Give incentive pay, bonuses or other special recognition for high performing teachers (Jiratatrapasot, 1988).

Longer term measures would be to:

a. Improve quality of rural schools and other non-Bangkok schools. The MOE's quality improvement programs during the Fifth and Sixth plans have sought to do this. Jiratatrapasot, 1988, found that teacher performance, education, and experience explained 11 to 29% of the variance in standardized test scores, and on this basis recommended in-service programs and teacher performance incentives.

b. Resist the suggestion that the rural secondary school curriculum be vocationalized. There is strong evidence that cognitive skills --the ability to learn and be trained --are what employers seek, and what enhances productivity and income.[17] The curriculum can and should make use of content and examples familiar to students but the core job must be greater literacy, numeracy, and reasoning ability. If there is to be a "practical curriculum", it must be one that enhances cognitive skills.

c. Remove the tuition ceiling barrier to entry of new private secondary schools in cities and provide new private schools with the

17. See Knight and Sabot (Forthcoming).

current subsidies but on a declining schedule overtime; this should be coupled with elimination of any subsidies of existing urban private schools, these subsidies are unnecessary given the high prices these schools can command. The premise of this suggestion is that there would be an increase in the supply of urban places at relatively low cost to the public budget. Students unable to get into the best public schools would have private alternatives of various prices and quality.[18] Public resources that would have been used to create new urban places particularly in bigger cities could then be used to reduce quality variations in public schools elsewhere.

d. Experiment with voucher schemes to encourage a variety of secondary school options and create market incentives for quality improvement, enrollment and retention in secondary schools.

5. VOCATIONAL SCHOOLS AND ON-THE-JOB TRAINING

There is little current research on vocational schools and patterns of on-the-job training. Little is known and more needs to be.

---

18. This is essentially the system in South Korea where private schools account for half of lower secondary enrollment and more than half of upper secondary enrollment.

5.1 VOCATIONAL SCHOOLS (BELOW BACHELOR'S DEGREE)

Graduates of vocational schools have the highest open unemployment rate of all graduates. Surpluses are predicted over the next decade or so.[19] There are questions of quality and of fit with employer demand.[20]

Enrollment in vocational schools was an estimated 15 percent of age group 15 to 17 in 1985 -- only slightly less than upper secondary.[21] Private schools are major providers at the vocational and technical levels where the barriers to entry are lower or nonexistent. Private schools account for 44 percent of vocational enrollment nationally, and 69 percent of vocational enrollment in Bangkok. Some or many of the vocational schools focus primarily on specific job skills, but perhaps not on the cognitive skills which may make workers more trainable.

Vocational schools which do not provide easy or clear access to higher education are less appealing to high ability academically successful students. If employers view these schools as producing less able graduates, then labor market effects may create adverse selection problems in the vocational schools. The fact that vocational graduates in Thailand have the highest open unemployment rate of graduates of any other level or type of education -- a rate of 11.4% in 1986, projected to

---

19. See TDRI (1988b) for the trend concerning the demand and supply of S&T vocational school leavers. See NESDB (1988) for the general employment and unemployment trends of vocational school leavers.

20. Ibid.

21. Sussangkarn, Ashakul and Myers (1986), and Phananiramai and Mason (1987).

increase slightly to 11.7% in 1991 -- may reinforce these perceptions and patterns.[22]

Indeed, statistical analysis indicates that these schools are probably acting as second choice or "no other choice" substitutes for upper secondary schools even when their quality is questionable and their fit with labor demand (either in terms of skills or, more likely, the trainability of their graduates, or both) is weak.[23]

First steps for policy should include analysis of those schools which appear successful in quality and labor market terms. Why are they successful and to what degree is enhancement of cognitive skills, of trainability, part of the curriculum? What are the capital and recurrent costs per graduate and the schools' relationship to employers? Can employer/school partnerships be developed to improve quality, give students access to up-to-date technology and graduates access to jobs in industry after successful completion of training?

5.2 TRAINING BY EMPLOYERS

Worker productivity and the competitiveness of Thai industry depend in large part on labor training on the job and in more formal training programs provided by employers. Very little is known about skill acquisition outside of formal education; about employer incentives and disincentives; policy options, costs and benefits of upgrading of the skills of workers as a function, in part, of variations in the quality and attainment

22. NESDB (1988).

23. Sussangkarn, Ashakul, and Myers (1986).

levels of formal education. Research by Knight and Sabot (forthcoming) indicates that employees who show the greatest gains in productivity from on the job training, from other employer training and simple job experience, are those with the strongest cognitive skills when hired.

Also, little is known about inter-regional and inter-firm mobility of skilled labor as a function of wage, skill, and educational attainment differentials, and as a source of entrepreneurship and a mechanism for the diffusion of information, innovations and technology. If job-jumping is common then diffusion will be high but employers will have an incentive to make training narrow and minimal, and as little marketable outside the firm as is consistent with satisfactory job performance in the firm. Some firms hire "apprentices" at wages far below minimum wage. But whether this is a devise to recoup training costs in a mobile labor market (studies in Malaysia show this pattern), or simply a devise to avoid paying the minimum wage is unknown.

Policy studies and intervention could include:

a . A careful, detailed analysis of employer training; little has been done so far.

b. Support for experimentation with private sector training programs which would serve groups of employers in the same industry so that narrowness of training and under-investment in training for fear of job jumping are reduced, and economies of scale, scope and specialization are realized.

c. Identification of cost-effective approaches.

6. HIGHER EDUCATION

Growth of higher education has been very rapid in response to social demand, and has taken place mainly in the open enrollment institutions. Total enrollment in 1985 in all institutions of higher education was 700,000; enrollment in the open universities was 570,000 students (Phananiramai and Mason, 1987). The open enrollment universities had 82% of enrollment in higher education -- up from 70% in 1978; the private universities had 5% and the MUA and MOE closed enrollment institutions the remainder.[24]

The questions for the future are whether social demand should continue to be accommodated mainly in the open access institutions or in new ones like them, or should a greater rather than a shrinking proportion of demand be accommodated in the closed universities and other selective institutions and, if it is, how selection mechanisms might be changed?

Growth of enrollment -- and of budgets, faculty compensation and quality research -- in the MUA closed enrollment universities has been very slow -- not more than 2.5% per year (Phananiramai and Mason, 1987). Yet these are the principal institutions offering the engineering fields in which private sector employers already report scarcities,[25] and fields predicted to be scarce in the future (TDRI, 1988b).

---

24. Ibid.

25. Bangkok Post, June 17, 1988 p. 17.

Some of the engineering and other skill shortages may be due to utilization problems including relative pay. The MUA's own data[26] show that less than half of university graduates report that their jobs make any direct use of their fields of study. Excluding government jobs (which now absorb far fewer new graduates), the proportion directly using their training ranged from 42 to 33 percent. More recently, only 53% of engineers in a sample of firms in Bangkok and Chiang Mai said their jobs made any use of their training (NEC, 1987). The data suggest rather that hiring criteria and employer rewards are based less on specific field than on perceived quality, intelligence, trainability, social class, etc.. None of this is surprising; the same results are found in most countries.

But there is also evidence of supply constraints in critical fields in the universities; take Bachelors degree engineering as an example. Bachelors degrees, in one or more of the engineering fields including computer sciences, are offered in the seven closed enrollment MUA universities; Chulalongkorn, Chiangmai, Kasetsart, Khon Kaen, KMIT, Mahidol, and Prince of Songkla. B.A. degrees in engineering are also offer by the Institute of Technology and Vocational Education (ITVE) run by the Ministry of Education. Five private universities recently initiated B.A. programs, one in computer science, one in computer engineering, one in electrical, one in mechanical and one in other engineering fields.

Most engineers are graduated from the MUA closed enrollment universities. Between 1982-1983 and 1985-1986, the number of engineers graduated from the MUA universities increased from

26. See, for example, MUA (1986).

1,668 to 1,933. The number graduated from ITVE increased from 308 to 635. There were no graduates yet in 85/86 from the new programs in private universities.[27]

At first glance these numbers seem impressive. Students and institutions appear to be responding to higher pay and high returns to engineering particularly in the private sector (NEC, 1987). The number of ITVE graduates has doubled, though from a low base. The number from MUA universities has increased by 15% -- 50% faster than the rate of overall growth of enrollment and graduation from the closed universities during the period. But the MUA numbers are misleading. Over the same four years, the number of basic science graduates decreased from 833 to 601. If that decrease is subtracted from the increase in engineering graduates the net increase in science and engineering graduates combined was only 33.[28]

Students are indeed responding to higher returns to engineering degrees and the relatively low returns to basic science degrees. They have shifted fields. But The MUA universities appear to have shifted capacity not to have added much if any new capacity. Budget constraints and low fees may be the reason.

Average annual recurrent and capital costs per student in engineering in 1985 in six of the closed enrollment universities were estimated at 56,000 baht.[29] Fees and other student charges

27. Calculated from TDRI (1988b), Appendix tables.

28. Ibid.

29. Calculated from NEC (1987), Appendix tables.

ranged from 3,500 to 4,500 baht per year. ITEV annual recurrent and capital costs were estimated at 43,000 baht; fees and other costs to students were just over 3,000.[30]

Possible short term and long term policy options for higher education, as for secondary education, would focus on increased flexibility, greater choice, reduced supply constraints and more market discipline.

Short term measures might be to:

a. Establish private-sector employer advisory councils to the ministries and universities.

b. Improve counselling and placement services for secondary students selecting fields of study, and for students entering and graduating from university.

c. Allow some initially small proportion of students already enrolled to shift fields after one or two years so that response to market changes will be more rapid and market orientation of students and of universities and faculties will be increased.

The recently adopted short-term measures to deal with the shortage of engineers -- including doubling-up of enrollment, re-tooling of basic science graduates and up-grading of vocational graduates make sense. But the long term solution is horizontal and vertical expansion of the closed enrollment universities and further growth of ITVE programs. Costs at ITEV are somewhat lower and student-teacher ratios higher, eighteen to one compared

30. Ibid.

to nine to one in MUA closed universities.[31] If quality is adequate and graduates meet employer expectations, then further expansion -- with fee increases --is warranted.

Other longer-term policy options might include:

a. Selection mechanisms which place some weight on students' records in secondary education and which defer decisions on fields until later -- that is, which admit the applicants to an institution of higher education not initially to a field --and which may further reduce the intense focusing of the secondary curriculum on single examinations and may lessen the danger that students will forego pursuing their real interests, and perhaps their future creativity, to the examination process and may improve university and student response to changing market demand.

b. Privatization of one or two of the MUA universities; Chula, because of its real estate holdings, and STOU, because it can operate on fees, are the most likely first candidates.[32] The"self-financed programs" (like the MBA programs at Chula and Thammasat) with high standards, high faculty compensation and high fees are examples of what privatization of the MUA universities might bring.

c. Privatization of the private universities by removing most MUA regulations which constrain innovation and expansion into fields important for future Thai development, replacing these regulations with an independent accrediting mechanism.

---

31. See Phananiramai and Mason (1987), and NEC (1987).

32. Dr.Wichit Srisa-an, personal communication, July, 1988.

Horizontal and vertical expansion of the closed enrollment, elite universities is indicated by manpower needs in fields which are offered primarily in these universities. Expansion, particularly at the graduate level, may also be indicated by the growing importance of research to the Thai economy and the need for new faculty members to staff the expansion. But the feasibility of expanding these universities will depend -- in part -- on prices and finance.

This is not a new issue; the arguments in favor of fee increases are well know and widely accepted. How to take the needed steps, however, is still not clear. The weight of evidence is that fees at the higher level could be raised with no decrease in demand and with revenues increasing in direct proportion. This may even be the case if only one of the selective institutions or fields increased fees and the others did not. This possibility was confirmed in LOGIT demand estimations and repricing simulations recently done for Thammasat in Chutikul-Khoman (1987). And since universities retain fees and faculty members are underpaid and forced to moonlight (hurting both teaching and research) the prospective connections between pricing policy and quality improvement -- as well as quantitative expansion of the critical fields -- are clear and compelling.

While changes in the fee structure will be necessary to address the fiscal and faculty constraints of the closed universities, the problem of faculty development and retention in scarce fields may persist even with a drastic change in fees and compensation. If faculty in key fields are hired away by the private sector has as happened in computer science in North America, then the ability to train the next generation is

threatened. (In North America the problem has been solved by human capital imports). Solutions for this potential problem in Thailand may require international support for a highly targeted and sustained program of Ph.D. fellowships in these fields.

References

Chutikul-Khoman, Sirilaksana (1988); "Overview of the Education Sector in Thailand: Its Problems and Policy Dilemmas", Background paper for Policy Study of Human Resources in Relation to Development Project, Thailand Development Research Institute, February.

Chutikul-Khoman, Sirilaksana (1987); "The Economics of Education Subsidies and the Effects of Fee Increases: A Case Study", Faculty of Economics, Thammasat University, Discussion Paper Series, No. 93, February.

Fuller, B. (1985); "Raising School Quality in Developing Countries: What Investments Boost Learning", Research Paper (Draft 2) The World Bank, Washington D.C..

Garvin, David A. (1980); The Economics of University Behavior. New York: Academic Press.

Green, Thomas F. (1980); Predicting the Behavior of the Educational System. Syracuse, N.Y.: Syracuse University Press.

Jimenez, Emmanuel (1987); Pricing Policy in the Social Sectors: Cost Recovery for Education and Health in Developing Countries. Baltimore: The Johns Hopkins University Press.

Jimenez, E., et. al. (1988); "The Relative Efficiency of Private and Public Schools: The Case of Thailand", The World Bank Economic Review, Vol. 2, No. 2, May.

Jirataprasot, Kanjanee (1988); "Academic Achievement Differences and Predictors of Academic Achievement: Public and Private Secondary Schools in Thailand", Doctoral thesis, Harvard University Graduate School of Education, Cambridge Mass.

Knight, J.B., and R.H. Sabot (Forthcoming); Educational Expansion, Productivity and Inequality. New York: Oxford University Press.

McGinn, Noel, et. al. (1980); "Education and Development in Korea: 1945-1975", Cambridge, Mass., Harvard University.

MUA (1986); "Summary Report: Status of Job Placement of Graduates, 1982-1983", Bangkok.

Myers, Charles N. (1988); "Higher Education and Secondary Education: Patterns, Predications and Planning", Paper Prepared for the Consultative Meeting on the Long Range Planning of Higher Education in Thailand, Bangkok, February 3-20.

National Economic and Social Development Board (1988); "A Study of Labour Market and Employment Patterns from 1986 till 2001", Manpower Assessment Section, Human Resource Planning Division, September.

NEC (1987); "Costs and Contributions of Higher Education: A Case of Thailand", (first draft), Educational Research Division, Bangkok.

NEC (1982); "An Evaluation Study of Primary School Efficiency in Thailand: The Determinant of Primary School Efficiency",

Office of the National Education Commission, Bangkok.

NEC/HIID (Forthcoming); "An Analysis of the Determinants of the Internal Efficiency of Primary Education", Memo.

Nitungkorn, S. (1987); "The Problems of Secondary Education Expansion in Thailand", in Mitsuo Ezaki (ed.), Development Planning and Policies in ASEAN Countries, Center for Southeast Asian Studies, Kyoto University.

Office of Educational Assessment and Testing Services (1984); As quoted in: Kanjanee Jirataprasot, "Academic Achievement Differences and Predictors of Academic Achievement: Public and Private Secondary Schools in Thailand," Doctoral thesis, Harvard University Graduate School of Education, (Cambridge Mass.: 1988.)

Phananiramai, M. and A. Mason (1987); "Enrollment and Education Cost in Thailand", HOMES Research Report No. 4, East-West Population Institute, Hawaii, December.

Schultz, Theodore W. (1968); "Resources for Higher Education: An Economists View", The Journal of Political Economy, Vol. 17, No. 3 (May/June, 1968).

Sussangkarn, C. (1988b); "Elementary Education in the Thai Economy and Role for Non-formal Education", Paper presented at the Ministry of Education Seminar on Alternative Education for Primary School Leavers, Rose Garden, July.

Sussangkarn, C. (1988a); "Production Structures, Labor Markets and Human Capital Investments: Issues of Balance for

Thailand", NUPRI Research Paper Series No. 46, Nihon University, Population Research Institute, Tokyo, Japan.

Sussangkarn C. (1987); "The Thai Labour Market: A Study of Seasonality and Segmentation", Paper presented at the International Conference on Thai Studies, ANU, Canberra, July.

Sussangkarn, C., M. Phananiramai, Y. Chalamwong, J. Behrman and P. Pattamakitsakul (1988); "The Relationships between Population and Development: Perspectives from the Study of Household Behaviors", Paper presented at the Thai Population Association Meeting, Bangkok, November.

Sussangkarn, C., T. Ashakul, and C. Myers (1986); "Human Resources Management", Paper presented at the TDRI 1986 Year-End Conference, Thailand Development Research Institute.

Teichler, Ulrich, Dirk Hartung, and Reinhard Nuthmann (1982); Higher Education and the Needs of Society, Windsor, Berks, U.K.: NFER Publishing Company.

Thailand Development Research Institute (1988c); "Human Resource Problems and Policy Priorities for Thailand", Report prepared for the ADB, Human Resources and Social Development Program, November.

Thailand Development Research Institute (1988b); "The S&T Manpower Situation in Thailand: An Analysis of Supply and Demand Issues", Report prepared for the Office of the Science and Technology Development Board, The Science and Technology Development Program, April.

Thailand Development Research Institute (1988a); "Long Term Forecasts", Report submitted to the Asian Institute of Technology as part of the NEA/CEC/AIT project on Energy Demand Analysis and Medium/Long term forecast in Thailand.

Thailand Development Research Institute (1986); "Population Policy Background Paper for the Sixth National Economic and Social Development Plan".